



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/089,051

03/25/2002

Dan-Keun Sung

P22145

5468

7055

7590

01/31/2006

GREENBLUM & BERNSTEIN, P.L.C.  
1950 ROLAND CLARKE PLACE  
RESTON, VA 20191

EXAMINER

ABELSON, RONALD B

ART UNIT

PAPER NUMBER

2666

DATE MAILED: 01/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/089,051	<b>Applicant(s)</b> SUNG ET AL.	
	<b>Examiner</b> Ronald Abelson	<b>Art Unit</b> 2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-53,55,56 and 58-61 is/are rejected.
- 7) ☒ Claim(s) 54 and 57 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/11/2002</u> . | 6) <input type="checkbox"/> Other: _____  |

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-51 and 59-61 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claims 1 and 59, the specification does not support the limitation, "allowing collision among multi-dimensional orthogonal resource hopping patterns within some data symbol durations". Note, the applicant teaches allowing collisions among hopping patterns (pg. 43 lines 6-13), but does not teach "allowing collision among multi-dimensional orthogonal resource hopping patterns within some data symbol durations" as claimed.

*Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 58 is rejected under 35 U.S.C. 102(e) as being anticipated by Dent (US 6,112,094).

Regarding claim 58, Dent teaches an apparatus for multi-dimensional orthogonal resource hopping multiplexing communication (orthogonal frequency hopping sequences, different frequency hopping patterns for each time slot, col. 5 lines 30-45) of a spread spectrum communication (col. 10 lines 16-19) comprising a digital communication system that includes a transmission apparatus of the primary communication unit (fig.

Art Unit: 2666

1, base station, col. 5 lines 24-26) and a reception apparatus of the secondary communication station (mobile station, col. 7 lines 63-66)

Dent teaches a channel encoder (different frequency hopping patterns for each time slot, col. 5 lines 30-45).

Dent teaches a multi-dimensional orthogonal (orthogonal frequency hopping sequences, different frequency hopping patterns for each time slot, col. 5 lines 30-45, col. 6 lines 56-58) resource hopping pattern generator (fig. 4 box 30, 31, each station adds its own unique offset to produce a number guaranteed to be different for every station in the cell, col. 7 lines 51-63).

Dent teaches a multi-dimensional (different frequency hopping patterns for each time slot, col. 5 lines 30-45, col. 6 lines 56-58) resource generator that generates multi-dimensional orthogonal resources according to the multi-dimensional hopping pattern (stations use different one of the orthogonal sequences, col. 8 lines 3-6).

Art Unit: 2666

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 52 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (US 6,112,094) in view of Haartsen (US 6,009,332).

Regarding claim 52, Dent teaches a multi-dimensional orthogonal (orthogonal frequency hopping sequences, different frequency hopping patterns for each time slot, col. 5 lines 30-45, col. 6 lines 56-58) resource hopping pattern generator (fig. 4 box 30, 31, 15, col. each station adds its own unique offset to produce a number guaranteed to be different for every station in the cell, col. 7 lines 51-63).

Dent teaches a multi-dimensional (different frequency hopping patterns for each time slot, col. 5 lines 30-45, col. 6

Art Unit: 2666

lines 56-58) resource generator that generates multi-dimensional orthogonal resources according to the multi-dimensional hopping pattern (stations use different one of the orthogonal sequences, col. 8 lines 3-6).

Although Dent teaches a list of allowed channels (col. 4 lines 7-11), the reference is silent on a multi-dimensional hopping pattern detector that detects of the collision of said multi-dimensional hopping patterns.

Haartsen teaches a multi-dimensional hopping pattern detector that detects of the collision of said multi-dimensional hopping patterns (Dynamic Hop set Selection, interference measurements, col. 4 lines 30-47).

Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Dent by having the base station take interference measurements of the hopping frequencies and not using frequencies that are currently experiencing interference due to external sources. This modification can be performed in software according to the teachings of Haartsen. The suggestion for the modification is to ensure that a channel experiencing the least interference will be chosen for the communications link (Haartsen: abstract). Note, Dent is silent on interference produced by sources external to the communications network.

Regarding claim 55, the multi-dimensional orthogonal resource generator consists of an orthogonal code generator (Dent: pseudo-random number generator, orthogonal-offset modifier modifies the pseudo-random number, col. 4 lines 12-23).

7. Claims 53 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (US 6,112,094) as applied to claim 52 above, and further in view of Dent (US 5,896,375).

Regarding claim 56, in addition to the limitations listed, Dent (US 6,112,094) teaches buffers (fig. 4 box 10, col. 11 lines 30-33) and a spreading orthogonal code generator (fig. 4 box 30, 31, stations use different one of the orthogonal sequences, col. 7 line 51 - col. 8 line 6).

Regarding claims 53 and 56, although Dent (US 6,112,094) teaches a multi-dimensional orthogonal resource generator, the reference is silent on a frequency synthesizer.

Dent (US 5,896,375) teaches a synthesizer for generating hopping frequencies (fig. 7 box 232, col. 13 lines 28-35).



Therefore it would have been obvious to one of ordinary skill in the art, to modify the system of Dent (US 6,112,094) by incorporating the synthesizer, of Dent (US 5,896,375). This modification can be performed according to the teachings of Dent (US 5,896,375) fig. 7. This modification would benefit the system by providing a reliable method of generating the orthogonal hopping frequencies.

#### ***Allowable Subject Matter***

8. Claims 54 and 57 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald Abelson whose telephone number is (571) 272-3165. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be

Art Unit: 2666

reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Ra*  
Ronald Abelson  
Examiner  
Art Unit 2666

*Ron Abelson*

\*\*\*

*Chi Pham*  
CHI PHAM  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 200

11/25/06